

Java, C++



Web

Motorcycles



Download



Index

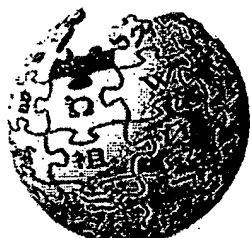
Manchester encoding

A form of encoding where a logical zero is coded as a change from one line state another, while a logical 'one' is coded as a change in the opposite direction. Manchester encoding is widely used in communications, for example in the ethernet system.

See also: [encoding](#), [ethernet](#)

[Kevin's computing glossary index](#)

Unless otherwise indicated, all materials on this site are copyright (c)2000 Kevin Boone/Web-Tomorrow. For information about downloading and using this material, see the [download policy](#) page. Please direct comments about this site to k.boone@web-tomorrow.com



WIKIPEDIA
The Free Encyclopedia

[Main Page](#)
[Recent changes](#)
[Random page](#)
[Current events](#)

[Edit this page](#)
[Discuss this page](#)
[Page history](#)
[What links here](#)
[Related changes](#)

[Special pages](#)
[Bug reports](#)
[Donations](#)

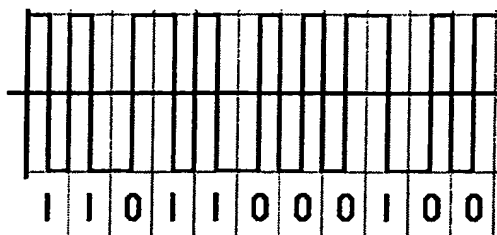
[Main Page](#) | [Recent changes](#) | [Edit this page](#) | [Page history](#)
[Printable version](#)

Not logged in
[Log in](#) | [Help](#)

Manchester code

(Redirected from [Manchester encoding](#))

In [telecommunication](#), **Manchester code** is a form of data communication in which each bit of data is signified by at least one transition. Manchester encoding is therefore considered to be [self-clocking](#), which means that accurate [synchronisation](#) of a data stream is possible. Each bit is transmitted over a predefined time period.



Encoding of 11011000100 in Manchester code

There are two opposing conventions for the representations of data.

The first of these was first published by G. E. Thomas in 1949 and is followed by numerous authors (e.g., Tannenbaum). It specifies that for a 0 bit the signal levels will be Low-High (assuming an amplitude physical encoding of the data) - with a low level in the first half of the bit period, and a high level in the second half. For a 1 bit the signal levels will be High-Low.

The second convention is also followed by numerous authors (e.g., Stallings) as well as by the IEEE 802.4 standard. It states that a logic 0 is represented by a High-Low signal sequence and a logic 1 is represented by a Low-High signal sequence.

A consequence of the transitions for each bit is that the [bandwidth](#) requirements for Manchester encoded signals is doubled compared with [asynchronous communications](#), and the [signal spectrum](#) is considerably wider. Although Manchester encoding is a highly reliable form of communication, the bandwidth requirements are seen as a disadvantage, and most modern communication takes place with asynchronous communications protocols.

One consideration with Manchester encoding is synchronising the receiver with the transmitter. At first sight it might seem that a half bit period error would lead to an inverted output at the receiver end, but further consideration reveals that on typical data this will lead to code violations. The hardware used can detect these code violations, and use this information to synchronise accurately on the correct interpretation of the data.

A related technique is [differential Manchester encoding](#).

In summary:

- data and clock signals are combined to form a single self-synchronizing data stream
- each encoded bit contains a transition at the midpoint of a bit period
- the direction of transition determines whether the bit is a "0" or a "1," and
- the first half is the true bit value and the second half is the complement of the true bit value. *Contrast with **non-return-to-zero**.*

Some source: from Federal Standard 1037C in support of MIL-STD-188

[Edit this page](#) | [Discuss this page](#) | [Page history](#) | [What links here](#) | [Related changes](#)

[Main Page](#) | [About Wikipedia](#) | [Recent changes](#) |



This page was last modified 12:15, 23 Nov 2003. All text is available under the terms of the [GNU Free Documentation License](#).



Manchester encoding

Search

Home

Contents

Feedback

Random

Manchester encoding

<communications, protocol> A method of transmitting bits which enables the receiver to easily synchronise with the sender.

A simple way of signalling bits might be to transmit a high voltage for some period for a 1-bit and a low voltage for a 0 bit:

```

Bits Sent:           1      1      0      0
Signal:      High    _____|_____
              Low    _____|_____
Time: ->          .      .      .      .

```


However, when several identical bits are sent in succession, this provides no information to the receiver about when each bit starts and stops.

Manchester encoding splits each bit period into two, and ensures that there is always a transition between the signal levels in the middle of each bit. This allows the receiver to synchronise with the sender.

In normal Manchester encoding, a 1-bit is transmitted with a high voltage in the first period, and a low voltage in the second, and vice versa for the 0 bit:

```
Bits Sent:          1      1      0      0
```

Signal:

High	
Low	

Time: -->

In Differential Manchester encoding, a 1-bit is indicated by making the first half of the signal equal to the last half of the previous bit's signal and a 0-bit is indicated by making the first half of the signal opposite to the last half of the previous bit's signal. That is, a zero bit is indicated by a transition at the beginning of the bit.

Like normal Manchester encoding, there is always a transition in the middle of the transmission of the bit.

Differential Manchester Encoding

```

Bits Sent:           1      1      0      0
Signal:      High    _____
              Low     _____

```

Time: ->

With each bit period half as long, twice as much bandwidth is required when using either of the Manchester encoding schemes.

(1995-11-23)

Try this search on [OneLook](#) / [Google](#)

Nearby terms: [Management Information Base](#) « [Management Information System](#) « [Manchester Autocode](#) « [Manchester encoding](#) » [Mandala](#) » [Mandelbrot, Benoit](#) » [Mandelbrot set](#)
